

*Balancing Traditional and Digital
Learning Resources
in College and High School
Classrooms*



Learning Resources

How do educators decide what learning resources to use?
Do textbooks still play a central role in student learning, or are digital platforms taking over?
And most importantly—how do students actually engage with these resources?

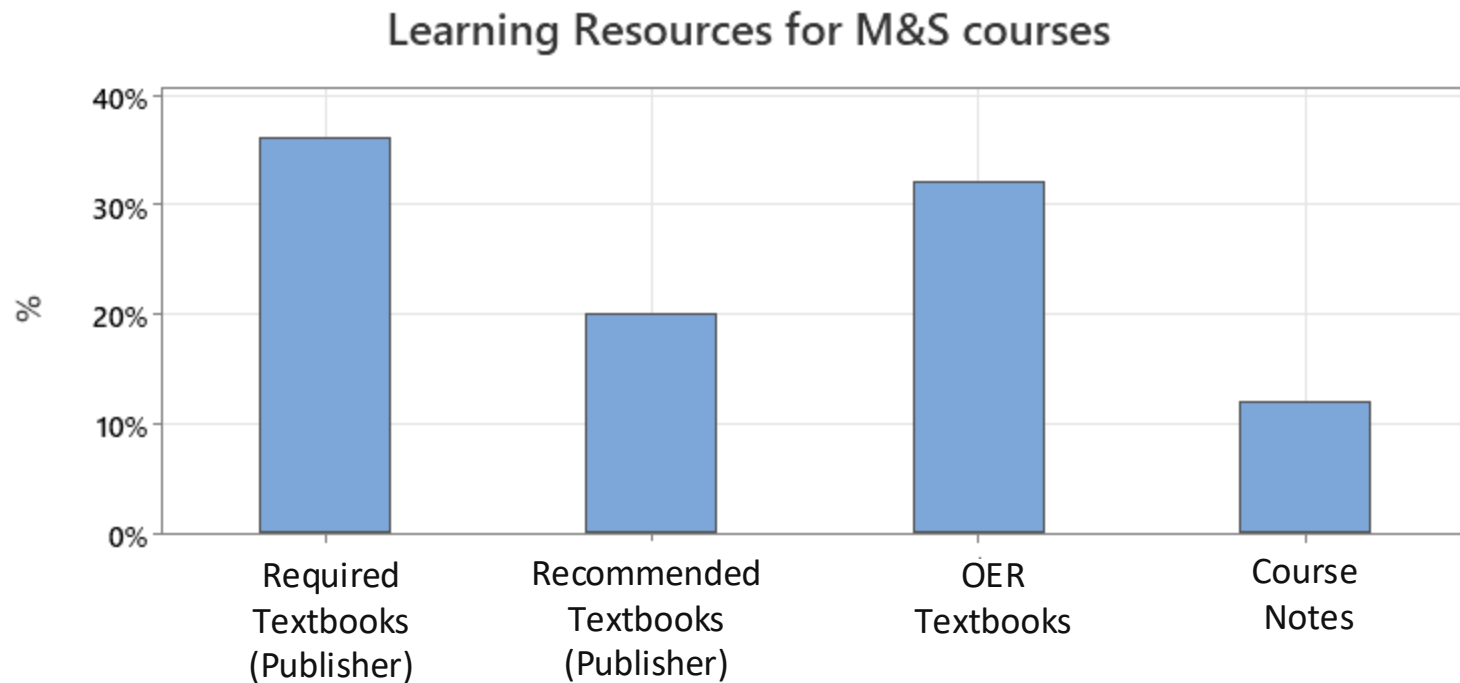


Let's begin by looking at how my colleagues and I select and use learning resources in our courses.

Learning Resources in College M&S

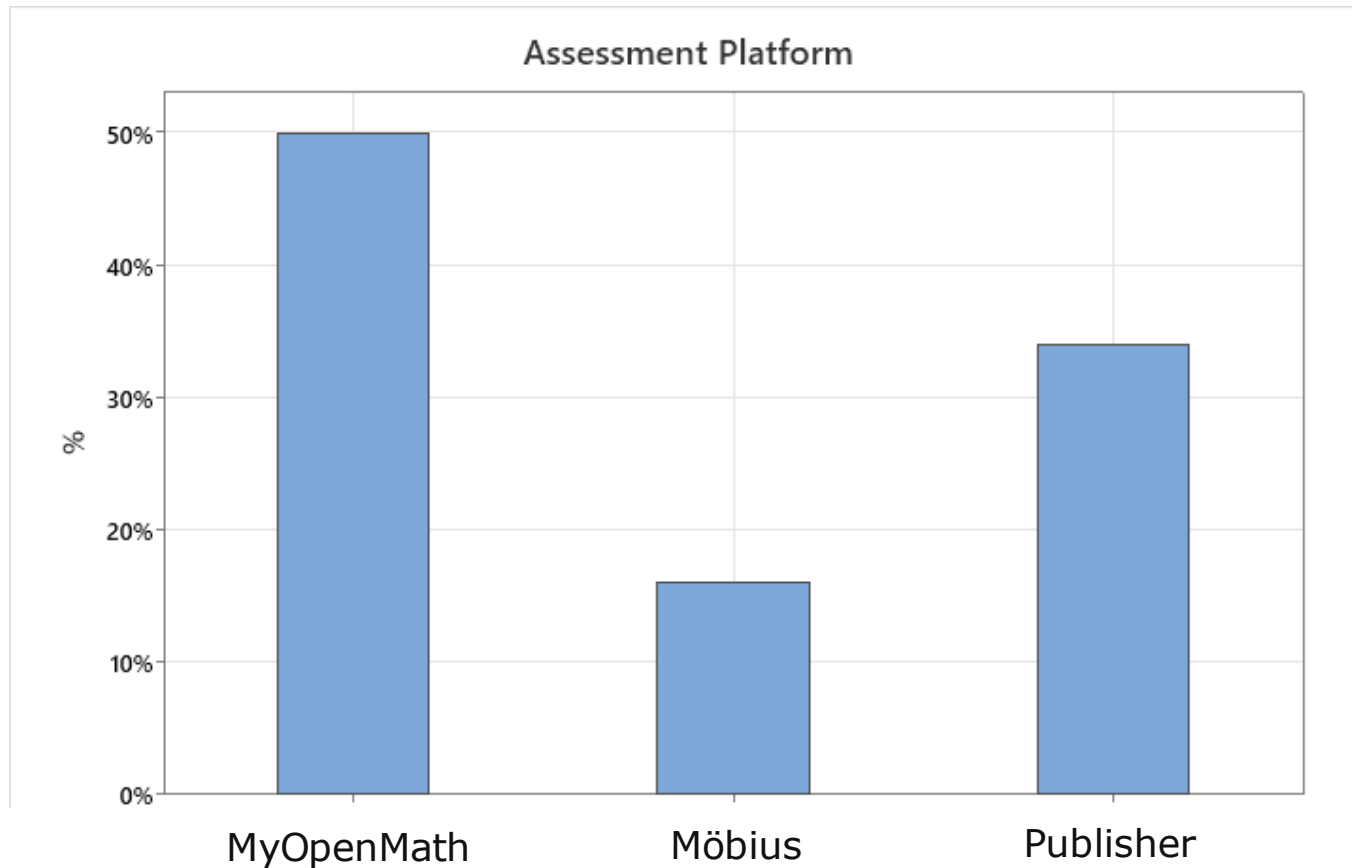
Faculty Textbook Choices:

Balancing Publisher Resources and Open Educational Materials



Learning Resources in College M&S

Assessments are a critical component of learning, but how do faculty choose the right platform to support student success?



Learning Resources in College M&S

Why do you use the types of learning resources you use in your courses?

Open Educational Resources (OER) and Open Online Assessment platforms

"There are 3 to 4 good open-source textbooks. The books are changeable, editable, adjustable."

Publisher Textbooks & Platforms

"I used a publisher textbook... the concepts are well explained, and the question bank is vetted - the book is magical."

Self-Created Resources

"I don't use textbooks for my learning, I use personal teaching resources."

Learning Resources in College M&S

How do Students Use Learning Resources?

Students do not consistently engage with assigned textbooks unless homework is directly linked to them.

Many students primarily use textbooks before exams rather than for regular study.

Faculty sometimes assign reading assignments to encourage textbook use.
"We have to force students to read by giving them assignments; they are not focused long enough to read."

Learning Resources in College M&S

What are the biggest challenges you face when using Publisher textbooks and their Assessment platform?

Cost for Students

“The challenge is the cost. It doesn’t feel good asking students to pay for the textbook.”

Lack of Customizability

“With open-source, I can supplement with my own notes, handouts, and videos, but with a publisher textbook, I don’t have that flexibility.”

Lack of Open-Ended or Exploratory Learning

“Some publisher platforms prioritize efficiency over deep learning—students complete tasks, but do they really understand the material?”

Learning Resources in College M&S

What are the biggest challenges you face when using OER textbooks and Open Assessment Platforms?

Incomplete or Inconsistent Content Coverage

"Open textbooks are good for foundational math, but for higher-level courses and statistics, we need the publisher variety."

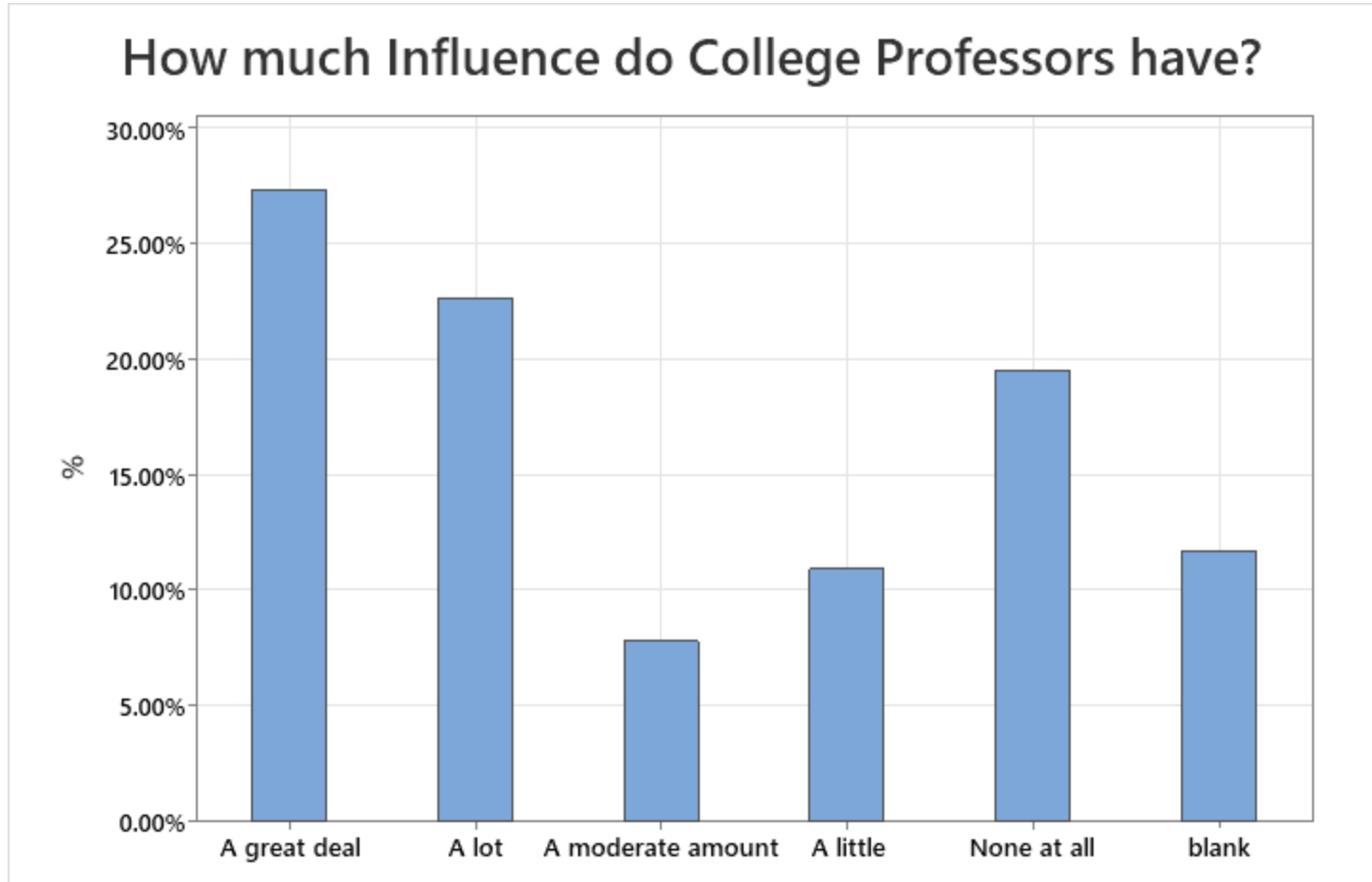
Lack of Quality Control & Vetting of Questions

"The open online platform has an excellent number of questions, but they are not vetted. As a teacher, the high number saves time for creating questions, but there is a need for verification."

Greater Instructor Effort for Customization

"The order of the textbook chapters matched my course, but I still needed to supplement with my own notes, handouts, applets, and videos."

Learning Resources in College M&S

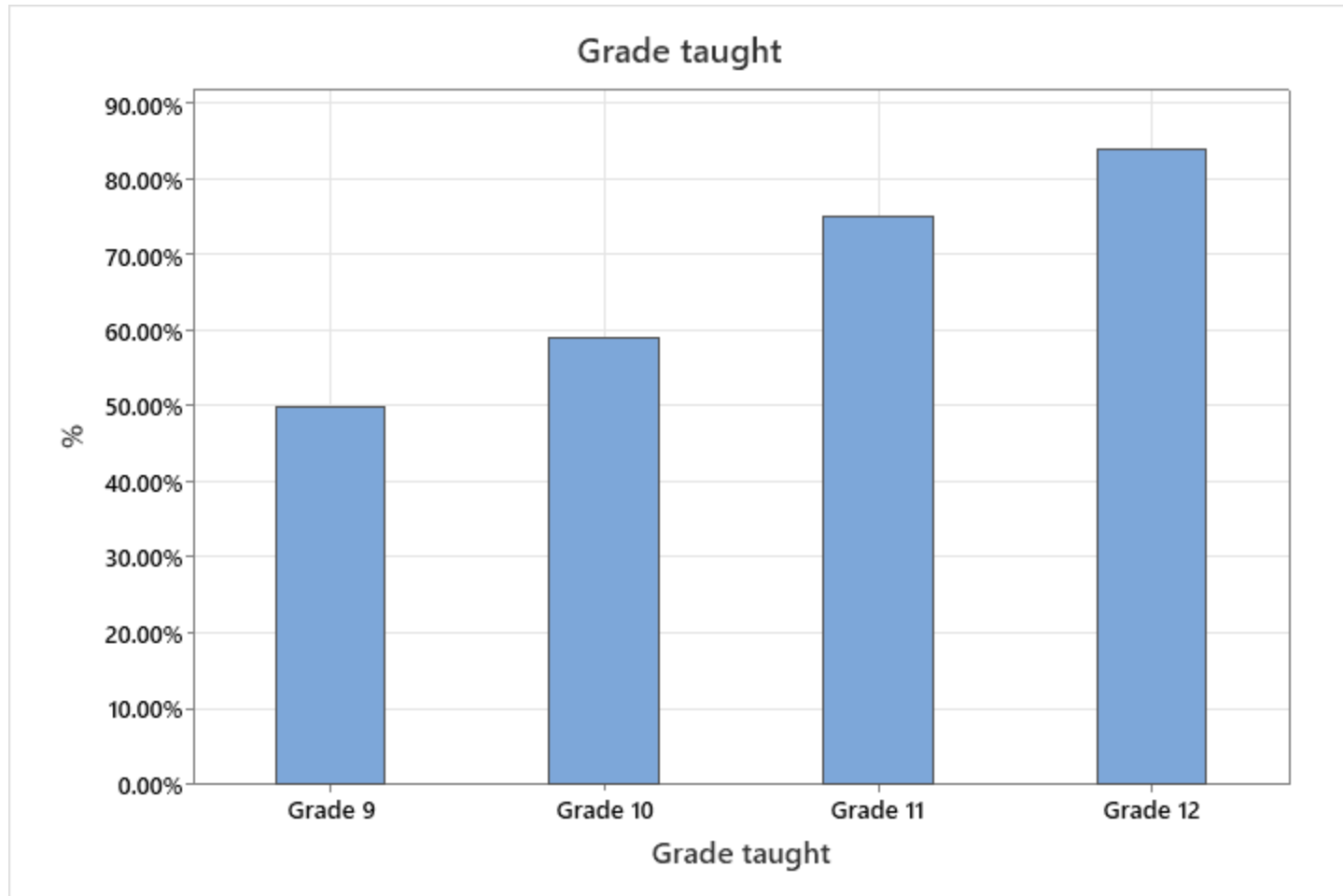


2023/24 Survey
Frosina SP (Mohawk C.) and Tracy F (Fleming C.)

Learning Resources in College M&S

- Faculty use both, open-source and publisher resources, often depending on course level and the need for vetted content.
- Students rarely engage with textbooks unless assignments are directly tied to them.
- Cost remains the biggest barrier for both printed and digital resources, especially with high textbook prices and access code fees.
- The future likely involves a hybrid approach, combining open educational resources, publisher materials, and self-created content.

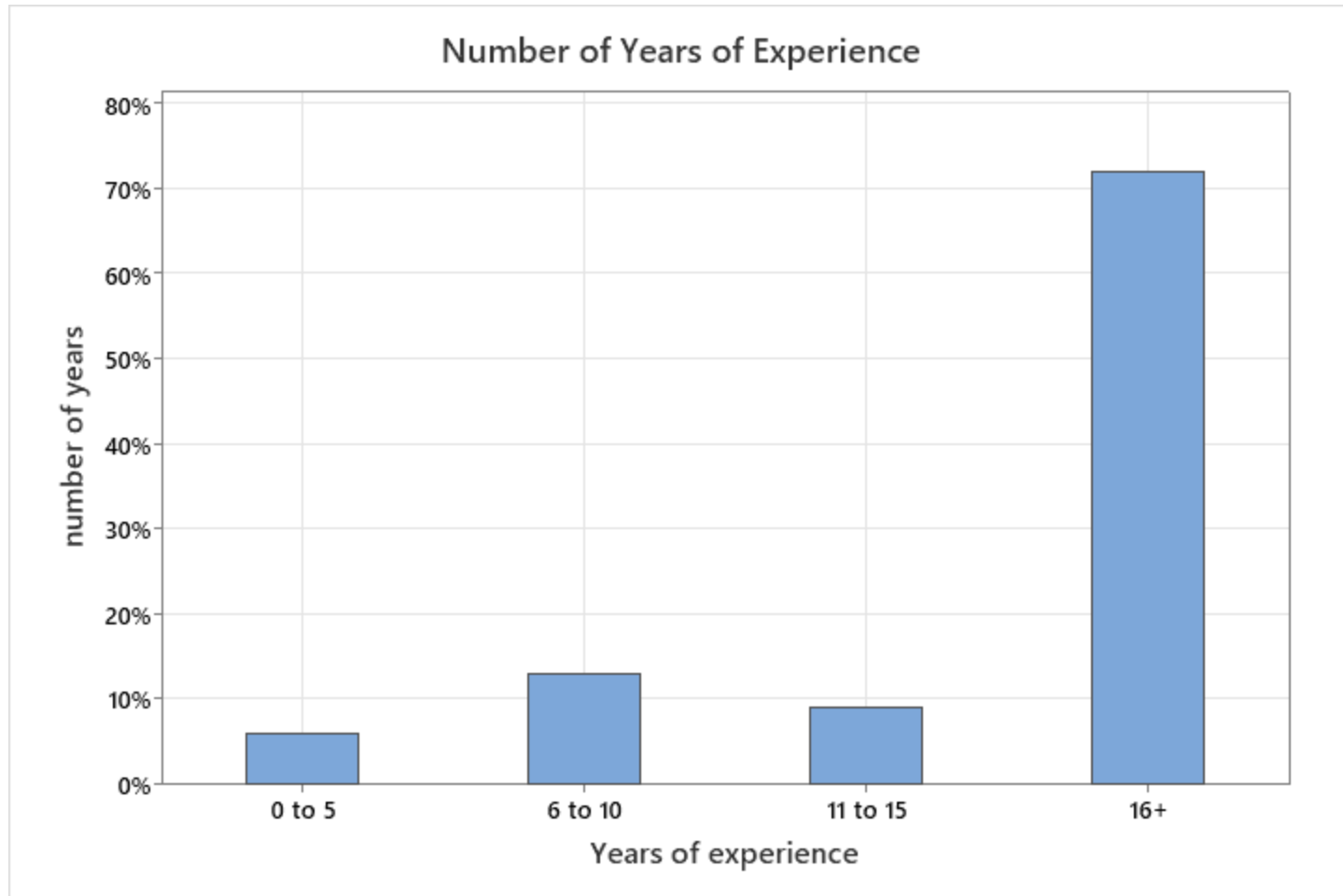
Learning Resources in High Schools



2025 Survey

Frosina SP (Mohawk C.) and Miroslav L, (McMaster U.)

Learning Resources in High Schools

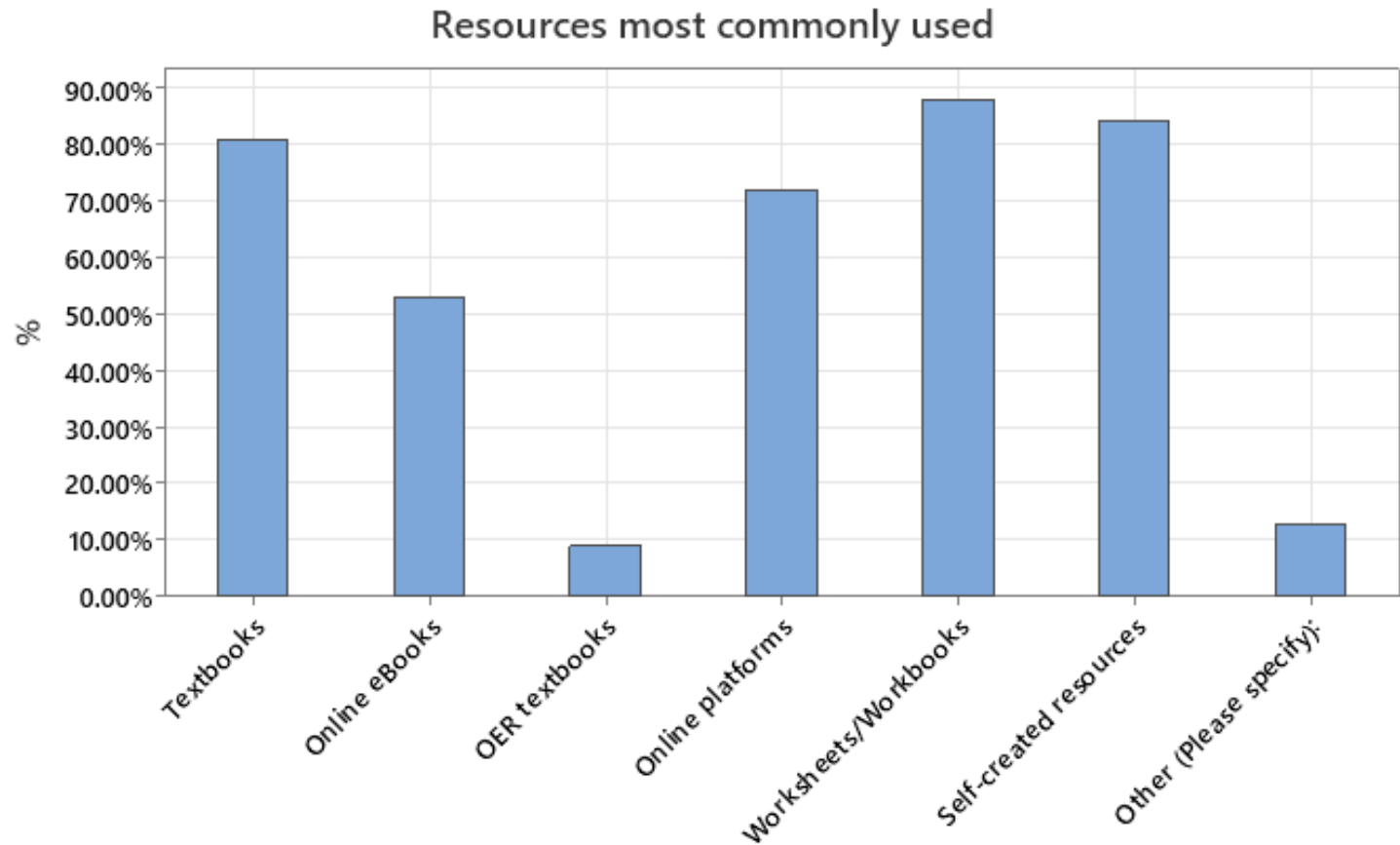


2025 Survey

Frosina SP (Mohawk C.) and Miroslav L, (McMaster U.)

Learning Resources in High Schools

Which of the following resources do you most commonly use in your math classes?

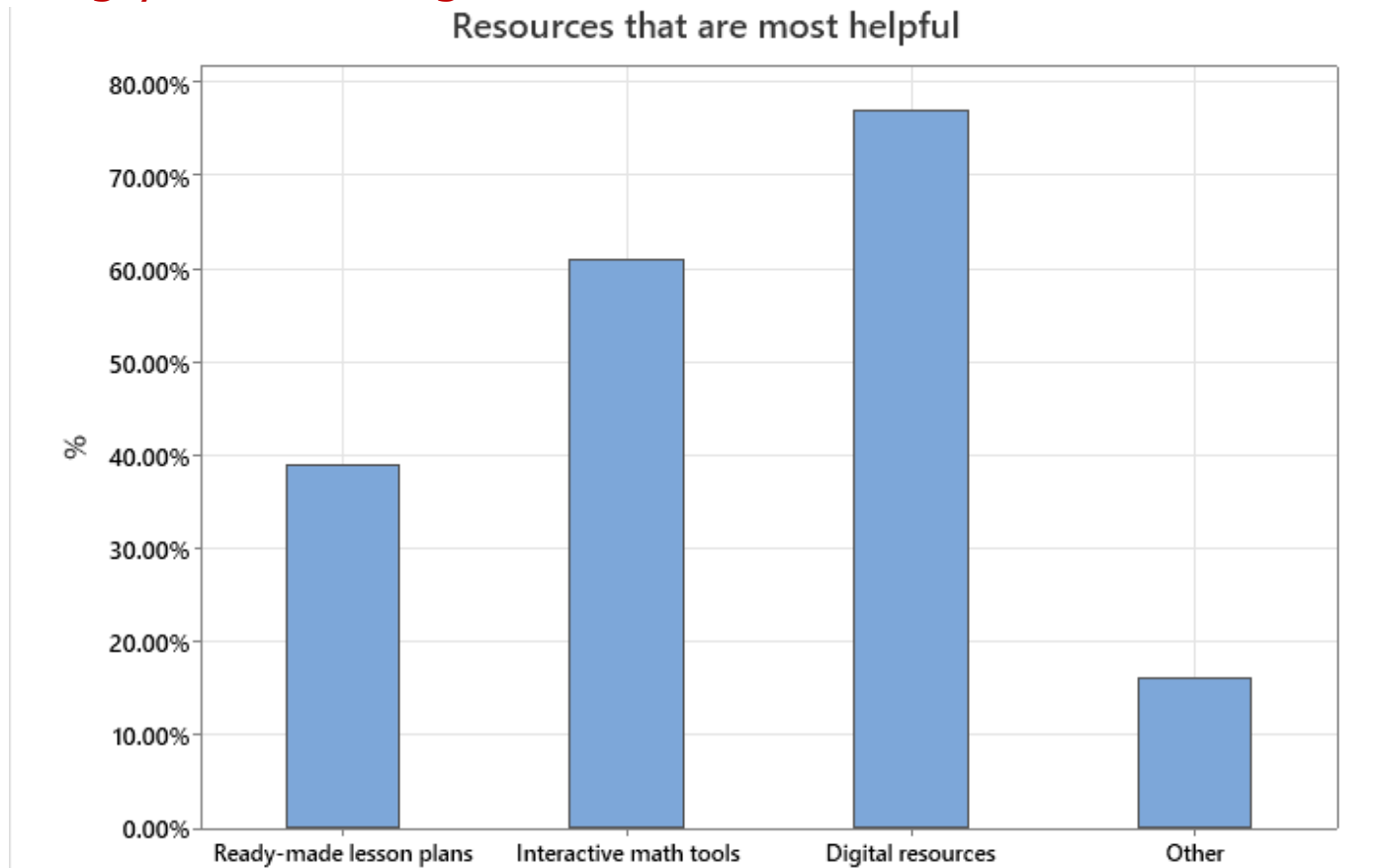


2025 Survey

Frosina SP (Mohawk C.) and Miroslav L, (McMaster U.)

Learning Resources in High Schools

What types of resources would be most helpful for enhancing/enriching your teaching?



2025 Survey

Frosina SP (Mohawk C.) and Miroslav L, (McMaster U.)

Learning Resources in High Schools

Which type of textbooks do you mostly use for your own lesson planning and instruction?

| | |
|---|-----|
| A combination of both physical and online textbooks | 22% |
| Physical textbooks (printed, hard copies) | 22% |
| Online textbooks (e-textbooks, digital versions) | 13% |
| I do not use textbooks for my personal planning | 13% |

Which type of textbooks do you primarily assign to your students?

| | |
|---|-----|
| A combination of both physical and online textbooks | 34% |
| Physical textbooks (printed, hard copies) | 28% |
| Online textbooks (e-textbooks, digital versions) | 19% |
| I do not assign textbooks for student use | 19% |

Learning Resources in High Schools

What are the main challenges you face when using physical textbooks?

| | |
|--|-----|
| Heavy and inconvenient to carry | 56% |
| Limited access to physical copies for all students | 47% |
| Difficult to update or replace outdated materials | 44% |
| Lack of interactive features | 25% |
| Other (Please specify): | 31% |

What are the main challenges you face when using online textbooks

| | |
|---|-----|
| Students do not have consistent access to devices or the internet | 40% |
| Difficult to navigate or use effectively | 40% |
| Technical issues (e.g., platform crashes, slow loading times) | 27% |
| Lack of support for digital tools in the classroom | 20% |
| Other | 37% |

Learning Resources in High Schools

To what extent have each resource that you have used helped your students learn a particular topics?

| | |
|---|-----|
| Physical textbooks | 30% |
| Online textbooks | 33% |
| Other Digital resources (apps/websites) | 37% |

What do you believe is the primary purpose of a textbook?

| | |
|---|-----|
| To serve as a resource for students to read and engage with | 72% |
| To provide structured guidance for students | 47% |
| To support teachers in delivering instruction | 44% |
| To assist parents in supporting their child's learning | 34% |
| To serve as a reference for students in future studies | 34% |
| Other (Please Specify): | 34% |

Learning Resources in High Schools

- Teachers use a mix of resources, including worksheets, self-created materials, and digital platforms, often supplementing or replacing traditional textbooks.
- Digital platforms like Khan Academy, Desmos, and GeoGebra (71%) are widely used, but Open Educational Resources (OER) like OpenStax have lower adoption (10%).
- While textbooks still have value, they are rarely the sole resource, as many teachers prefer customized materials.
- Physical textbooks face challenges, such as inconvenience and difficulty in updating, while digital textbooks struggle with inconsistent access to devices and internet and navigation issues. Teachers view textbooks more as a resource for reading rather than a primary teaching tool.
- There is a strong demand for digital resources (80%), with many seeking interactive math tools, but technical difficulties still pose significant challenges.

The Textbook of the Future - Lyman Bryson

An address given by *Bryson* at the National Arts Club of New York, in 1936

“... and in regard to the textbook the goodwill and patience of the child have been called upon to an unreasonable degree.”

“I hope some day to see textbooks so beautifully printed, so admirably illustrated, so charmingly colored, so touched with humor and imagination, so legible, so intelligible and so intelligent that children will keep their textbooks and make them companions for years afterwards - fantastic to expect, but think what a difference it would make in education!”

Thank you for your time.

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